

The present listing of claims replaces all prior versions and listings of claims in the subject patent application.

Listing of Claims:

Claim 1 (currently amended): A method for increasing absorption of light radiation incident on a surface of a photo responsive device which comprises the step of forming a grating on the surface of said photo responsive device upon which the light is incident such that higher grating orders are generated within said photo responsive device and a greater amount of the incident light entering said photo responsive device propagates more closely to the surface upon which the light is incident than is achieved by ~~a refractive surface refraction~~, thereby increasing light absorption by said photo responsive device close to the surface upon which light is incident.

Claim 2 (original): The method as described in claim 1, wherein said photo responsive device is selected from the group consisting of solar cells and photo detectors.

Claim 3 (previously amended): The method as described in claim 2, wherein said solar cell comprises silicon.

Claim 4 (original): The method as described in claim 1 further comprising the step of forming a grating on the surface of said photo responsive device opposite to the surface upon which light is incident.

Claim 5 (original): The method as described in claim 1, wherein said photo responsive device comprises silicon having a thickness of < 100 μm .

Claim 6 (original): The method as described in claim 1, wherein said step of forming a grating comprises reactive ion etching.

Claim 7 (previously amended): The method as described in claim 6, further comprising the step of selective KOH etching to remove reactive ion etching induced surface damage.

Claim 8 (original): The method as described in claim 1, wherein said step of forming a grating comprises wet chemical etching.

Claim 9 (previously amended): The method as described in claim 1, wherein the grating comprises rectangular projections.

Claim 10 (previously amended): The method as described in claim 1, wherein the grating comprises triangular projections.

Claim 11 (original): The method as described in claim 1, wherein the grating comprises a blazed grating.

Claim 12 (previously amended): The method as described in claim 2, wherein the grating is chosen to have optimal performance within the solar spectrum.

Claim 13 (previously amended): The method as described in claim 1, further comprising the step of anti-reflection coating the surface of the grating upon which light is incident.

Claim 14 (original): The method as described in claim 2, further comprising the step of forming a junction in the solar cell using ion implantation.

Claim 15 (currently amended): A method for producing a solar cell having increased absorption of light radiation incident on a surface thereof which comprises the steps of: (a) forming a grating on the surface of said solar cell upon which the light is incident such that higher grating orders are generated within said solar cell photo-responsive device and a greater amount of the incident light entering said solar cell photo-responsive device propagates more closely to the surface upon which the light is incident than is achieved by refraction a refractive surface; (b)

removing surface contamination; (c) forming an n-type junction using gas source doping; and (d) forming n- and p-electrical contacts.

Claim 16 (original): The method as described in claim 15, wherein said step of forming a grating comprises reactive ion etching.

Claim 17 (previously amended): The method as described in claim 16, further comprising the step of removing reactive ion etching-induced surface damage using wet chemical etching.

Claim 18 (previously amended): The method as described in claim 17, wherein said step of wet chemical etching comprises exposing the surface to KOH and nitric acid solutions.

Claim 19 (original): The method as described in claim 15, wherein said step of forming a grating comprises wet chemical etching.

Claim 20 (currently amended): A method for producing a solar cell having increased absorption of light radiation incident on a surface thereof which comprises the steps of: (a) forming a grating on the surface of said solar cell upon which the light is incident such that higher grating orders are generated within said solar cell photo responsive device and a greater amount of the incident light entering said solar cell photo responsive device propagates more closely to the surface upon which the light is incident than is achieved by refraction a refractive surface; (b) cleaning the surface to remove surface contamination; (c) forming an n-type junction by ion implantation; (d) annealing the solar cell formed thereby; and (e) forming n- and p-electrical contacts.

Claim 21 (original): The method as described in claim 20, wherein said step of forming a grating comprises reactive ion etching.

Claim 22 (original): The method as described in claim 20, wherein said step of forming an n-type junction comprises ion implantation using $^{31}\text{P}^+$.

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Claim 23 (original): The method as described in claim 20, wherein said step of annealing the solar cell comprises heating the solar cell in an oxygen atmosphere.

Claim 24 (original): The method as described in claim 20, wherein said step of forming a grating comprises wet chemical etching.

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